Draft Specifications: Zero Energy Standby Mode (ZESM)

Bernard Aebischer
ETH, Switzerland
bernard.aebischer@eeh.ee.ethz.ch

What is ZESM?

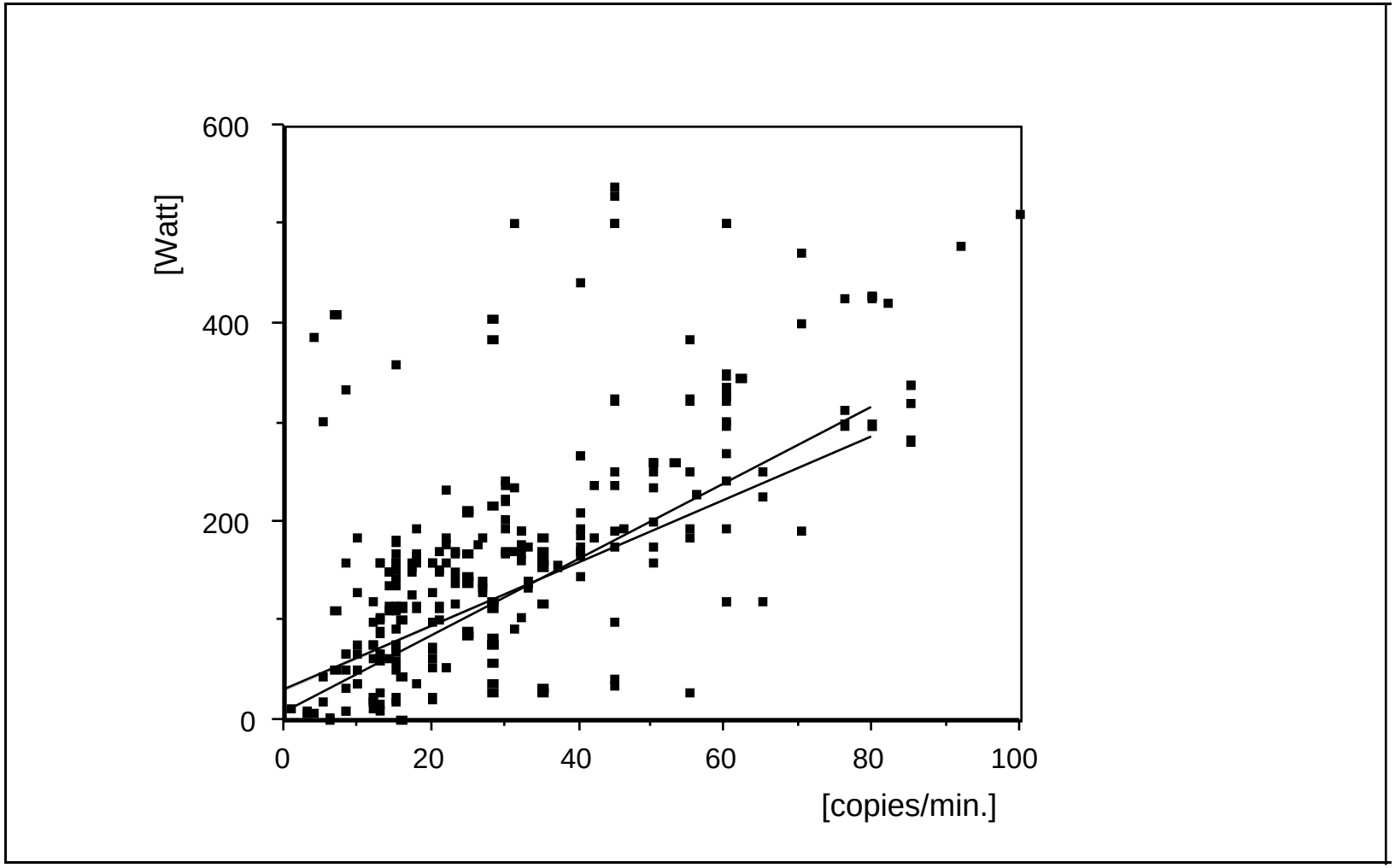
- **ZESM AND RECOVERY TIME**
- **IF Very Short Recovery Time**

  AND

  Very Short Time to Enter ZEM

THEN “Low Power” = “Standby” = “Sleep” = “Off”

Power consumption in an energy saver mode of copiers on the market in Switzerland in 1994. (Most of the copiers with 21 cpm and a power consumption much below the two lines have a recovery time > 30 sec.)



Meaning of “TARGET 1” and “TARGET 2”?

	Target 1	Target 2			
	very ambitious long term target	minimum requirement shorter term target			
SPEED	60 cpm (upper limit mid-range)	30 cpm (lower end of mid-range)			
POWER		30	40	60	cpm
	10 W	10	20	30	W

Why not ZERO Power Consumption?

- Power of fusing unit = 0W
- 10, 20, 30 W for Electronics... (to be Discussed!)
  - Different Values for Analog, Digital, Multifunction, Color?
- Not Included Power Consumption of Additional Services, e. g. Anti-Humidity Device

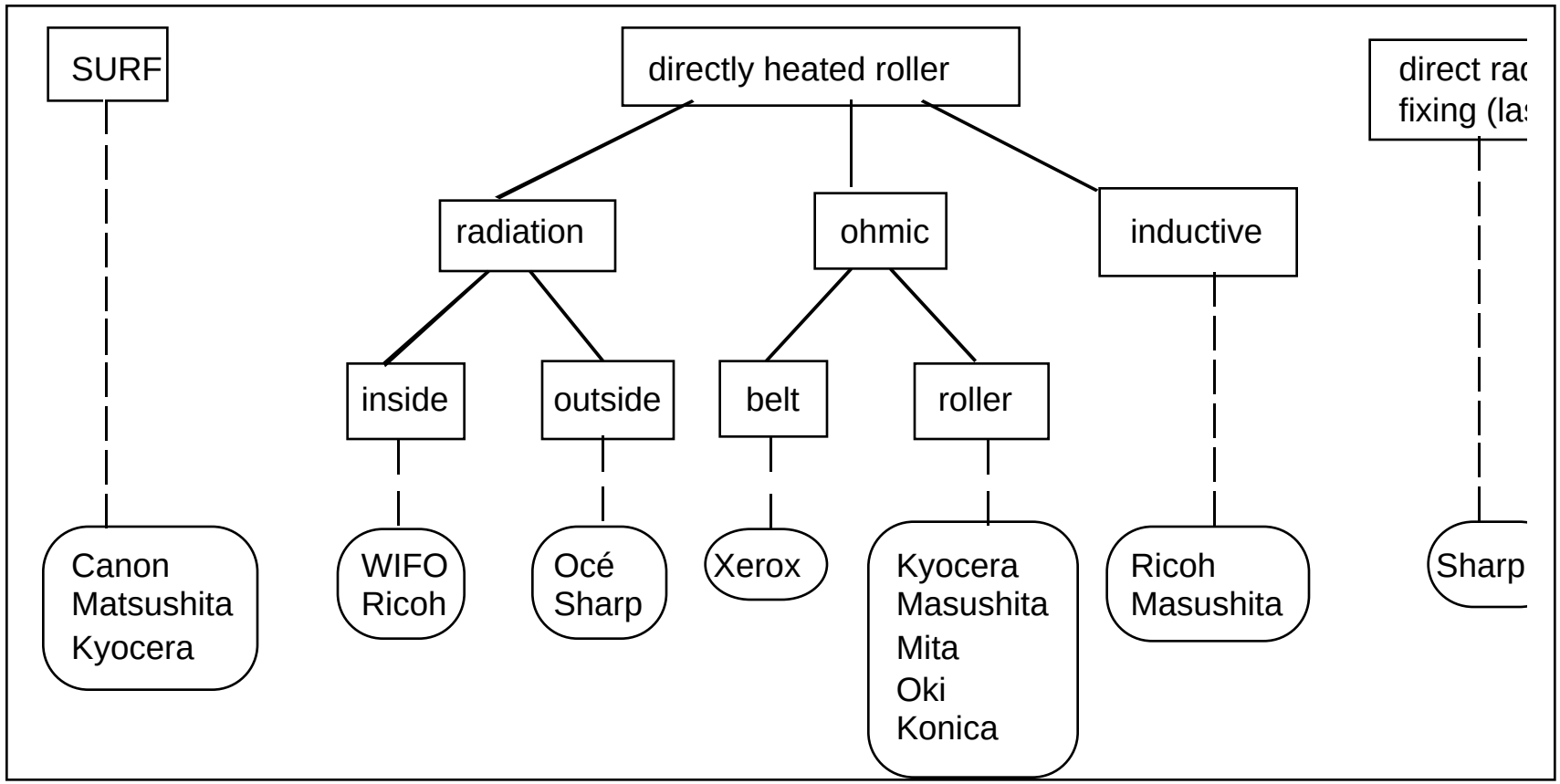
Why Technology Procurement of ZESM?

- **Large Investments in New Products (Digital, Multifunction, Color)**
  - **Demand Pull Needed to Get ZESM**
  - **SOON for All Types of New Products**
- **Mid-Range Copiers: 30 - 60 cpm**
  - **Represent 1/4 of Market and 1/3 of Energy**

Feasibility?

- **Patent Survey by Peter Jeanmaire:**
  - **Fast Increasing Numbers of Patents**
  - **Several Different Technological Solutions are Proposed by Different Companies**
- **Some Development Work Under Way**

Genealogy of patents related to low energy standby mode fixing (Jeanmaire 1996)



Advantage of ZESM Requirement

- **Innovation: Acceleration of trend (slow copiers)**
- **Manufacturer: Cross Cutting Technology**
- **Government: Complementary to Other Initiatives**
- **Buyers: Save $ 100 per year and PR**
- **Users: No Waiting Time**
- **Global: 2 Years Accelerated Market Introduction -> Cumulated (15 Years) Potential**
  - **Energy Saving 1500 - 15000 GWh**
  - **$ 200 - 2000 Millions**
  - **CO2 Reduction: 0.8 - 8 Millions Tons**